

Waters of LIFE



Demonstration Catchment Selection Report

30th June 2022





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1. Introduction

Waters of LIFE is a European Union funded Life Integrated Project to help reverse the ongoing deterioration in water quality in Ireland's most pristine rivers. This ongoing loss of high-status waters is a worrying trend for overall water quality in Ireland. The protection and restoration of these waters is a key principle underpinning the EU Water Framework Directive and will have benefits for us all.

The project will focus on those river water bodies which were assigned a high status objective in the river basin management plan for Ireland 2018 to 2022. High Status Objective (HSO) water bodies are those that are were;

- At high status when WFD monitoring began ca., 2000, or
- At less than high status when monitoring began but have consistently achieved high status since then (see EPA methodology for assigning high status objective in **Appendix I**).

The Waters of LIFE project proposal required that 5 Demonstrations Catchment be selected in which measures would be trialled for the protection and restoration of HSO river water bodies. A sixth catchment that has maintained high status consistently was to be selected to act as a control and a location for the trialling of soft protection measures.

The Irish River Basin District has been divided into 4845 water bodies of which 3208 are river water bodies. Of these, 319 were assigned a High Status Objective in the River Basin Management Plan for Ireland 2018 to 2021. These are contained in 164 sub catchments.

Each river water body has a defined sub-basin (catchment area) which vary significantly in area but are of the order of 20km² on average. Sub-catchments are 5 or 6 times that area, generally 100 - 150km² and are usually made up of several complete sub basin though occasionally a sub basin is divided between two or more sub catchments near large river channels. The sub-catchment scale is considered most suitable for demonstration projects as such areas encompass a sufficient variety of land uses, vegetation types and topography to facilitate meaningful trials in multi pressure systems. As a result this is the scale which has been used by the Waters of LIFE in the selection of its demonstration areas.

The proposal intended for the Demonstration Catchment selection to follow characterisation of the HSO rivers. However, it quickly became apparent that many criteria that affect the catchment selection are independent of the characteristics of the individual river water bodies. For this reason it was possible to progress with catchment selection in advance of characterisation of the rivers themselves.

2. Initial Screening for Suitable Sub Catchments

The catchment section process began in early Sept 2021 with an analysis of the occurrence and distribution of HSO rivers. The 164 sub catchments containing HSO rivers underwent a screening exercise which looked at the percentage of the sub catchment area that was a covered

by the sub basin of a HSO river and the area of the sub catchment which was inputting into HSO rivers. The aim was to identify sub catchments where there was a significant proportion of the sub-catchment relevant to protecting or achieving high status in HSO rivers while allowing the full range of pressures to be explored. Catchment with large areas covered by HSO sub basins were screened in e.g. **Figure 1**, while those with only a small area particularly if in the upper reaches were screened out e.g. Figure 2. This initial screening produced a long list of 42 sub catchments that had suitable areas of HSO rivers.

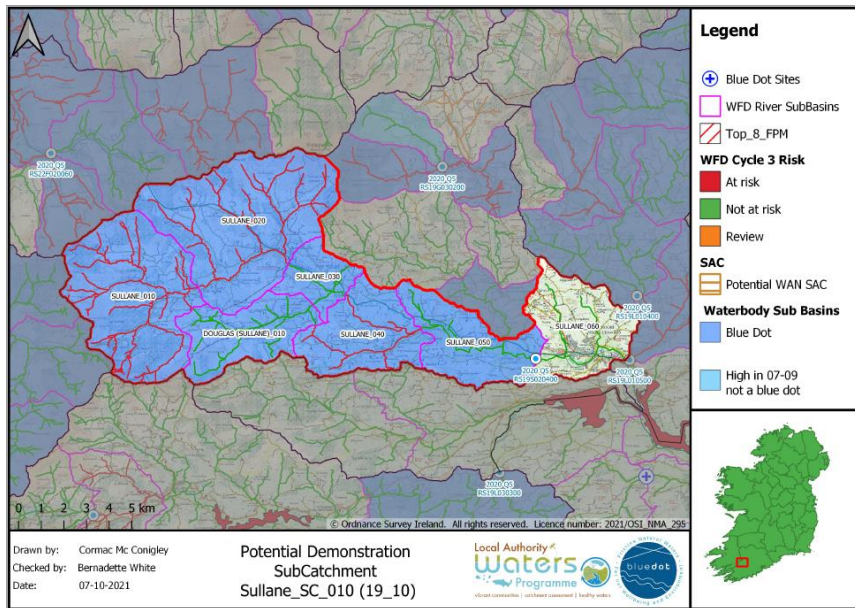


Figure 1: Example sub catchment with a large area of HSO Sub Basin (Screened in)

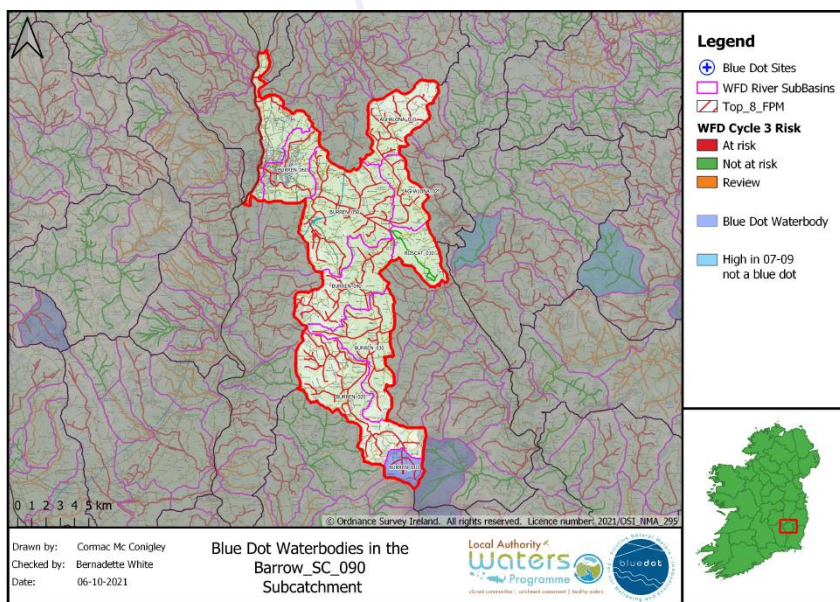


Figure 2: Example sub catchment with a small area of HSO Sub Basin (Screened out)

3. Interaction with the CAP Strategic Plan (CSP)

In November 2021 a proposals under the draft [CAP Strategic Plan](#) included the introduction of an enhanced Agri Environmental and Climate Measures (AECM) in certain areas of the country, which would target HSO rivers as well as other priority environmental assets. The areas in which this enhanced AECM will operate is referred to as “cooperation areas”. It was considered that the project could add value to the CAP by introducing the project RBAPS to deal with agricultural pressures outside of these areas. Therefore further consideration of the locations of the demonstration catchments was deferred pending finalisation of the locations of the cooperation areas.

Once the details of the 8 cooperation areas had been agreed (**Figure 3**), the catchment selection was recommenced. The Cooperation Project areas incorporate 240 of the 319 HSO rivers (**Figure 4**). In these areas there will be RBAPS available to farmers including enhanced measures for waters quality. Starting with the 42 Sub Catchment longlisted earlier, to add value to CAP and avoid overlapping the projects RBAPS with the RBAPS under CAP, sub catchments where agriculture was identified as a significant pressure and which were located within the cooperation areas were screened out. Six sub catchments remained after these criteria were applied i.e. had significant areas relevant to the high status objective rivers, were outside the cooperation project areas and had agricultural pressures. A 7th sub catchment (Suck_SC_020) was added where LAWPRO had identified agriculture as a significant pressure, even though it had not been listed as such in 2nd cycle characterisation for the RBMP.

The 7 shortlisted catchments were further analysed to identify those where other significant pressures considered important in the context of HSO water bodies were present. Consideration was also given to whether catchments were areas for further action under the floods directive. Based on this further analysis 3 of the six demonstration catchments were selected. Figure

ACRES Cooperation Project Areas

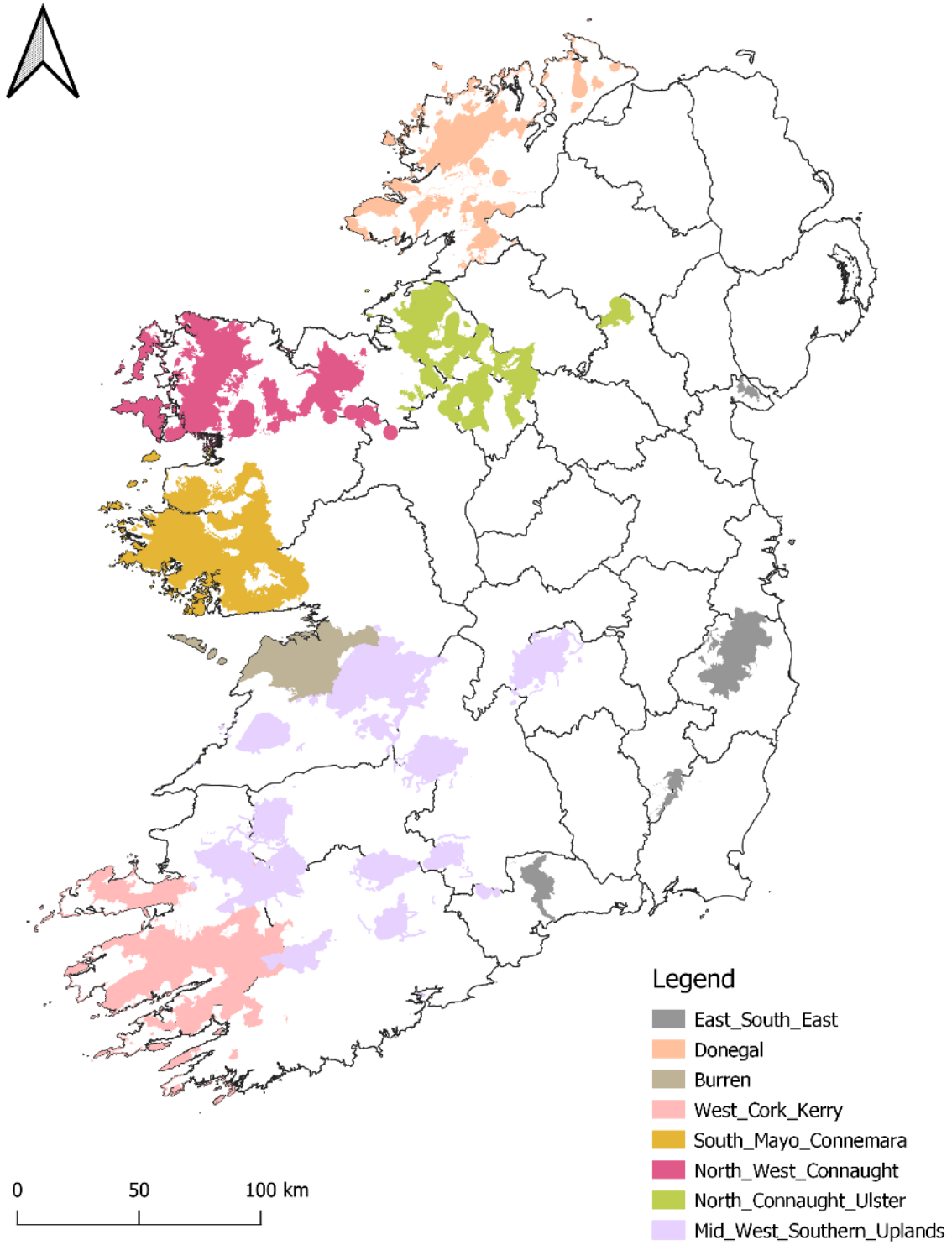


Figure 3: Locations of the ACRES Cooperation Projects

ACRES Cooperation Project Areas and Blue Dot river Sub Basins

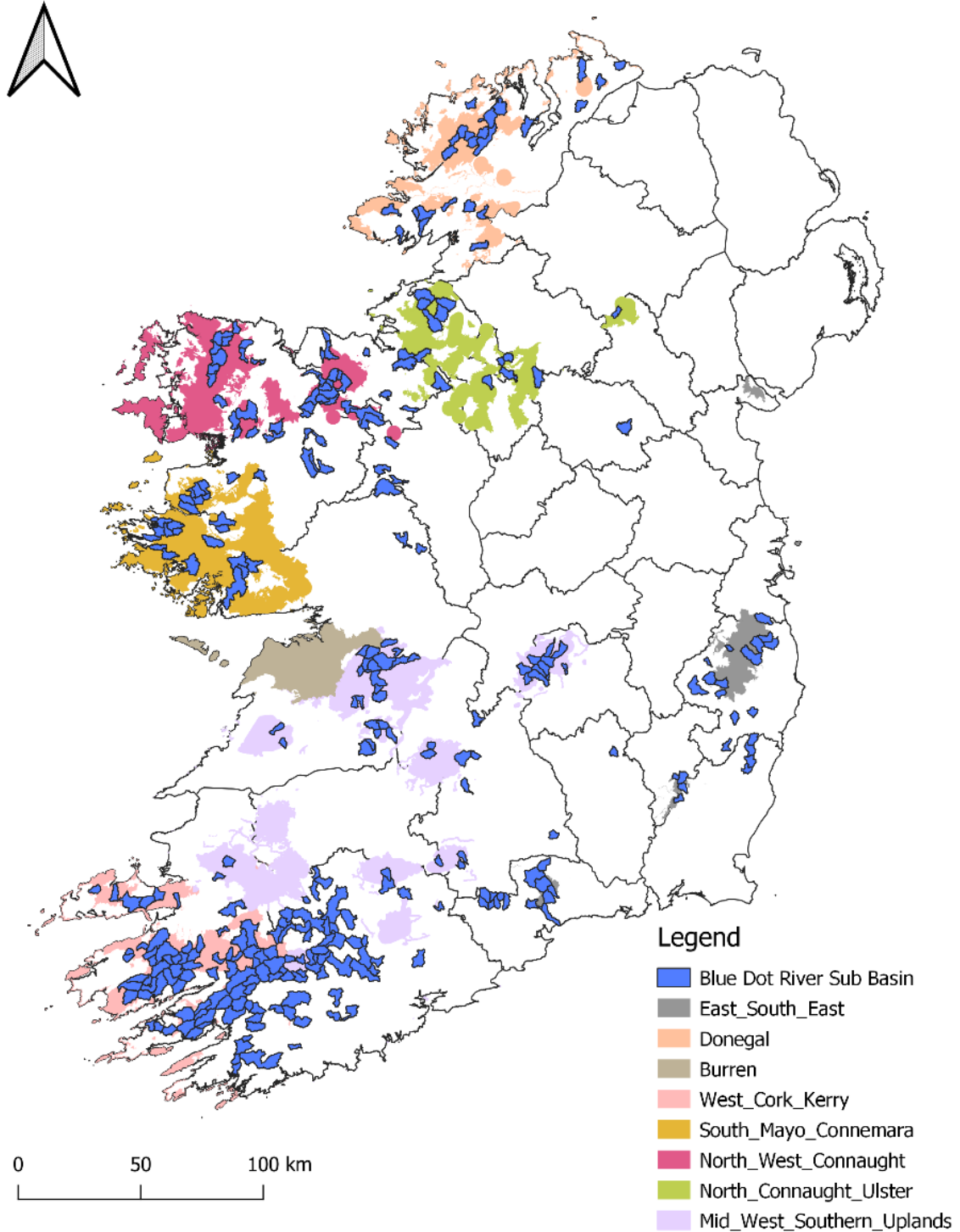


Figure 4: Overlap of HSO Sub Basins and Cooperation Projects

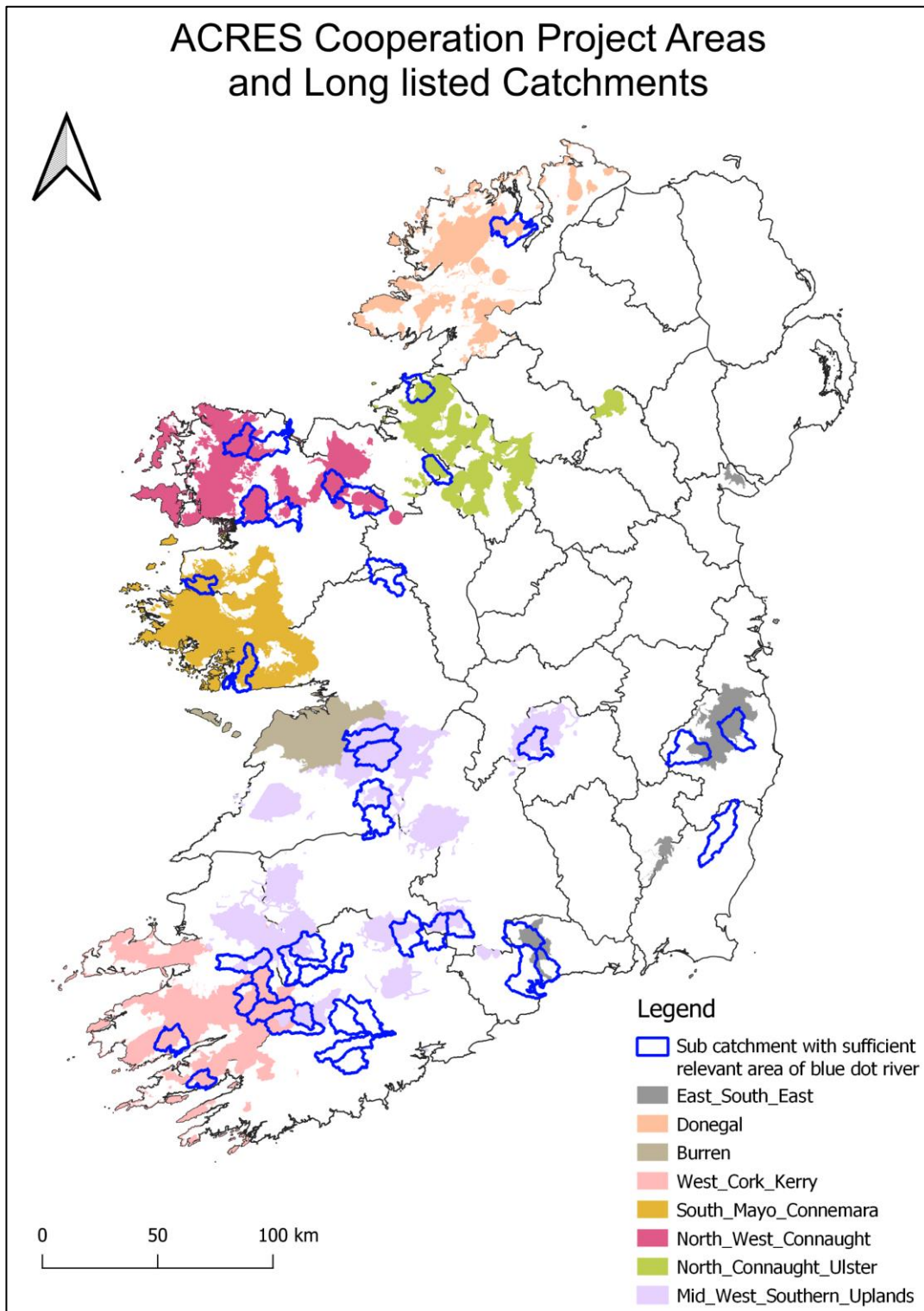


Figure 5: Overlap of longlisted catchments and ACRES Cooperation project areas

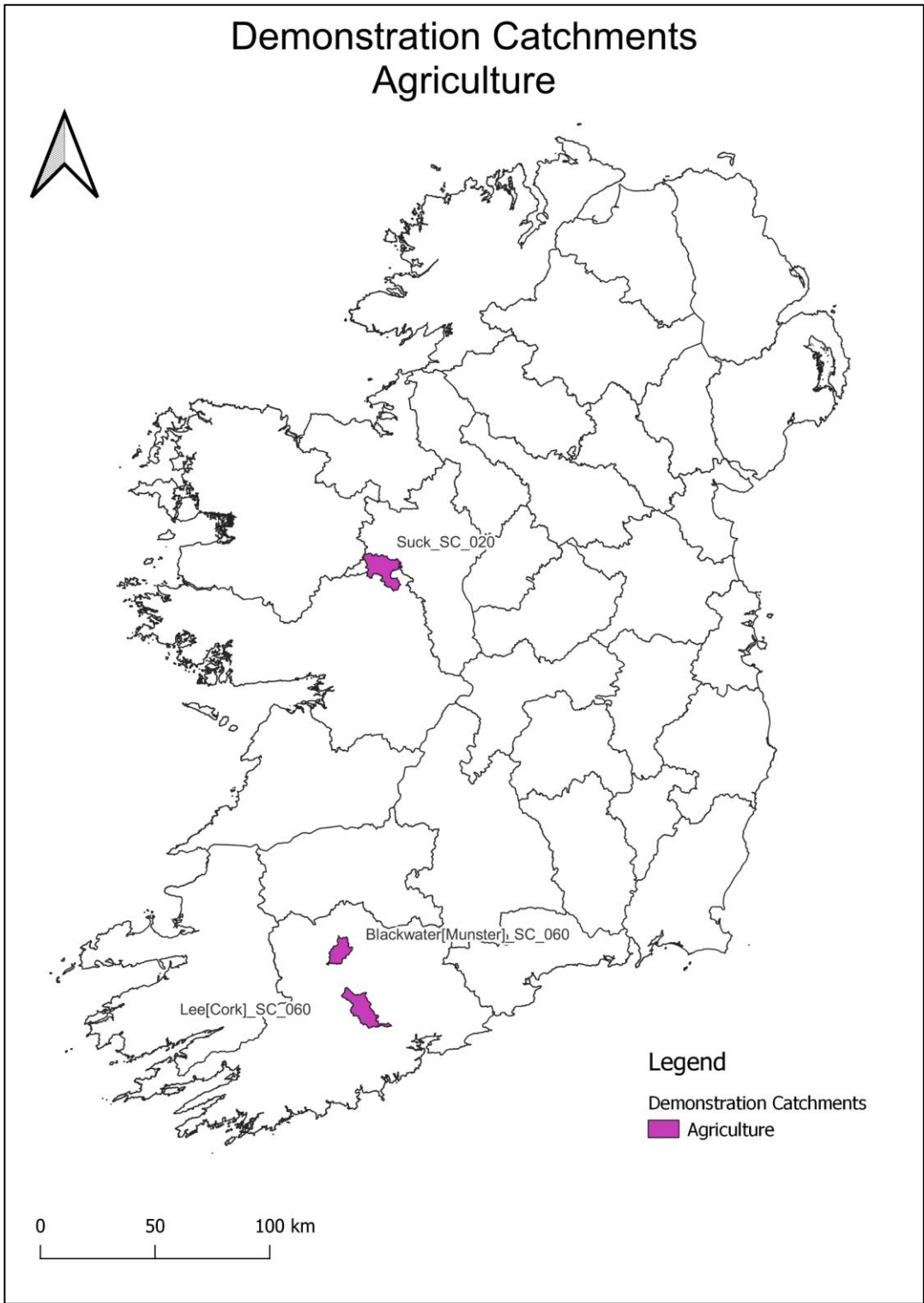


Figure 6: Locations of the agriculture focused Demonstration Catchments

4. Catchments with Forestry as a Pressure

A further two active demonstration catchments, where forestry was the primary significant pressure, were selected in consultation with Coillte and The Forest Service. The choice of sub catchments was not constrained in this instance by the requirement to lie outside the cooperation areas. The following was the procedure adopted for selection of these two catchments.

The 164 sub catchments with HSO rivers were overlain with the Department of Agriculture, Food and the Marine (DAFM) spatial data on forest cover. A query on this intersection was run to include data on ownership, species, age class, soils, presence of Natura sites among other considerations such as approved and pending felling and thinning licences. Once complete, an assessment of the forest cover was undertaken to establish the types of forest that would be representative of the sub catchment. A decision on the types of forests to be included in the demonstration catchment was taken during a meeting between The Forest Service and the project team in February 2022. It was agreed to include a sub catchment with a high proportion of peat on the western seaboard, as well as a sub catchment with uplands on a mix of blanket peat and mineral soil as these were representative of the typical forests in these areas. Publicly owned forests dominate in these areas due the nature of the forest establishment history in Ireland. However there is also a proportion of privately owned forestry in these areas.

The EPA and DAFM forestry datasets were passed to Coillte and a meeting was held with between DAFM and Coillte to examine the Coillte programme of works for the coming ten years. The selection of the Demonstration Catchment were refined with consideration of the volume of future operations, the percentage of the agreed operational areas to include western and uplands peats, the amount of private forestry and the age class of same, and any potential operational constraints. This process identified two Sub Catchments as most suitable these were the Avonmore_SC_010 in Wicklow and the Graney_SC_020 in Clare (**Figure 7**).

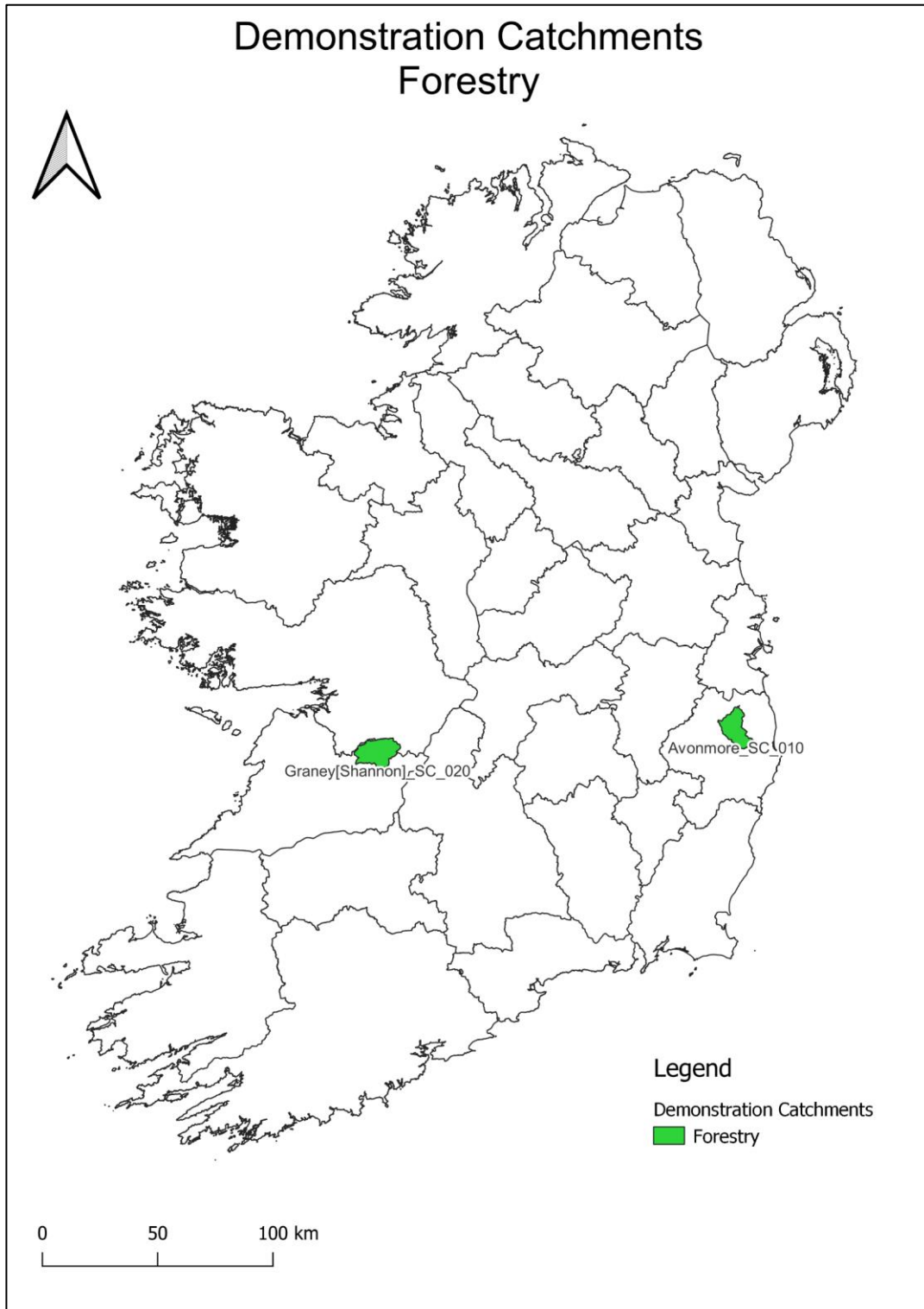


Figure 7: Locations of the forestry focused Demonstration Catchments

5. Control/Protection Catchment

In order to choose the control, all sub catchments which predominantly consisted of rivers which were long term High Status and *not at risk* were examined. There were 4 such candidates. Of these three were in County Cork, Blackwater[Munster]_SC_070, Glengarriff_SC_010, and Coomhola_SC_010. The fourth Sheen_SC_010, which was located in County Kerry was chosen as the control in order to achieve a better geographical spread of catchments.

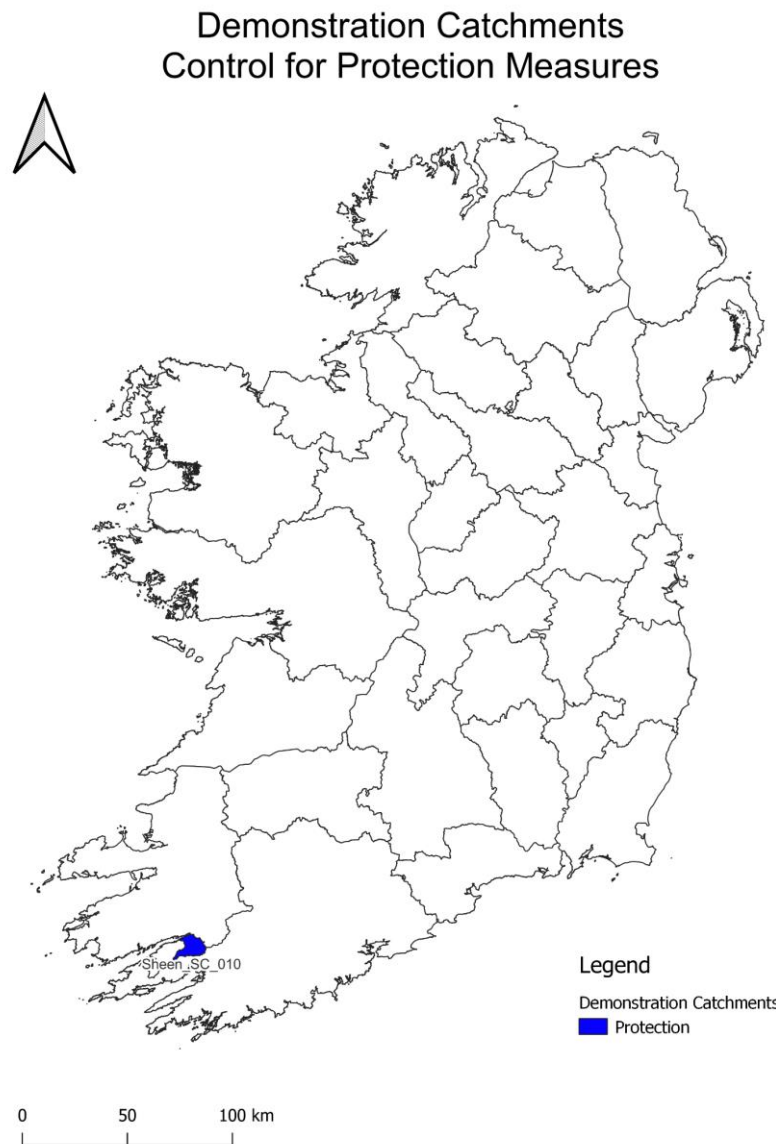


Figure 8: Locations of the Control focused Demonstration Catchments

6. Significant Pressures Impacting on Selected Sub Catchment

It was essential that the selected catchments captured all of the common pressures acting on HSOs rivers such as Peat Extraction, Hydromorphology and Waste waters. Analysis of the significant pressures acting on HSO rivers in the demonstration catchments confirms that all pressures are present in the demonstration catchments (**Table 1**).

Table 1: List of significant pressures identified in each demonstration catchment.

Pressure Category	Pressure Sub-category	Sub Catchment Name
Agriculture	Agriculture	Blackwater[Munster]_SC_060
		Lee[Cork]_SC_060
	Pasture	Suck_SC_020
		Avonmore_SC_010
Anthropogenic Pressures	Unknown	Avonmore_SC_010
		Lee[Cork]_SC_060
Atmospheric	Atmospheric	Avonmore_SC_010
Domestic Waste Water	Single House Discharges	Lee[Cork]_SC_060
Extractive Industry	Peat	Avonmore_SC_010
Forestry	Clearfelling	Avonmore_SC_010
		Graney[Shannon]_SC_020
Hydromorphology	Embankments	Blackwater[Munster]_SC_060
		Lee[Cork]_SC_060
	Land Drainage	Suck_SC_020
Invasive Species	Invasive species	Graney[Shannon]_SC_020
Urban Run-off	Diffuse Sources Run-Off	Lee[Cork]_SC_060
Urban Waste Water	Agglomeration PE < 500	Suck_SC_020
	Agglomeration PE > 10,000	Lee[Cork]_SC_060

7. Adjusting the Demonstration Catchment Boundaries and Renaming.

As noted earlier the demonstration catchments were selected from Environmental Protection Agency (EPA) defined sub catchments. The names of the sub catchments have been used throughout this report but are not clearly understandable to the general public. For this reason each demonstration catchment was given a name that would more meaningful to local residents and which will be used in all publications and discussion going forward. The names and rationale of their selection are outlined in **Table 2**.

Some minor modifications to the boundaries of the EPA sub catchments were made to form the demonstration catchments. These were generally to ensure that the demonstration catchments comprised distinct hydrological units made up of complete sub basins as far as possible. This meant removing areas which consisted of a small part of a sub basin in some cases and in others, adding sub basins that formed a logical part of the demonstration catchment. The alterations, if any, to each sub catchment are described below and maps showing these changes are provided in **Appendix II**.

Shournagh

A section of the Lee SC 060 sub catchment to the south was removed from the demonstration catchment. This area discharges to the main channel of the Lee river (LEE (CORK)_090). Measures in this area could not influence the condition of the HSO rivers in the demonstration catchment.

Awbeg (kilbrin)

A small river (LISDUGGAN_NORTH_010) to east of the sub catchment was added to the demonstration catchment. This river is assigned to the neighbouring sub catchment (Blackwater[Munster]_SC_090) but discharges into the selected sub catchment (Blackwater[Munster]_SC_060). Measures in the Lisduggan will influence conditions in the demonstration catchment.

Island

A section of the Suck SC 020 sub catchment to the east was removed from the demonstration catchment. This area discharges to the main channel of the Suck river (SUCK_050). Measures in this area could not influence the condition of the HSO rivers in the demonstration catchment.

The Avonmore, Graney and Sheen were not altered and the demonstration catchments are identical to the initial EPA sub catchments.

Table 2: Description of alterations to the area and names of the demonstration catchments

EPA Name	WOL Demo Catchment Name	Reason for name change	Alterations to boundary	Principal pressure sector
Avonmore_SC_010	Avonmore	Coding removed.	Unaltered	Forestry
Blackwater[Munster]_SC_060	Awbeg (Kilbrin)	Awbeg is the local name for the tributary of the blackwater covered by the demonstration catchment. Kilbrin was added to differentiate the demonstration catchment from a more well-known Awbeg river to the west.	Slight reduction to remove small section of Blackwater main channel. Inputting river added though part of neighbouring sub catchment it is relevant to the demonstration catchment river.	Agriculture
Graney[Shannon]_SC_020	Graney	Coding removed.	Unaltered	Forestry
Lee[Cork]_SC_060	Shournagh	Shournagh is the name of the tributary that is covered by the demonstration project and will differentiate the area from the greater Lee river.	Slight reduction to remove small section of Lee main channel	Agriculture
Sheen_SC_010	Sheen	Coding removed.	Unaltered	Control
Suck_SC_020	Island	Island is the name for the tributary that is covered by the demonstration project and will differentiate the area from the greater Suck river.	Slight reduction to remove small section of Suck main channel	Agriculture

Appendix I

Environmental Protection Agency (EPA) Criteria for
Identification of High Status Objective Waters

Rivers									
Baseline (Q value only – 1998-2006)	Overall ecological status				Cycle 2 decision (based on 2007-2015 data)		Cycle 3 decision (based on 2007-2018 data)		
	2007-2009	2010-2012	2013-2015	2016-2018	HES objective?	HES Objective been met?	HES objective?	HES Objective been met?	Reason
High	High	≤ Good	≤ Good	≤ Good	Yes	No	Yes	No	Already HSO, can't retract objective
High	High	≤ Good	≤ Good	High	Yes	No	Yes	No	Already a HSO candidate
< High	High	≤ Good	≤ Good	≤ Good	No	Not applicable	No	Not applicable	Still not a HSO candidate
< High	High	≤ Good	≤ Good	High	No	Not applicable	No*	Not applicable*	See Note 1
High	High	High	≤ Good	≤ Good	Yes	No	Yes	No	Already HSO, can't retract objective
High	High	High	≤ Good	High	Yes	No	Yes	Yes	Already a HSO candidate
< High	High	High	≤ Good	≤ Good	Yes	No	Yes	No	Already HSO, can't retract objective
< High	High	High	≤ Good	High	Yes	No	Yes	No	Already a HSO candidate
High	≤ Good	High	≤ Good	≤ Good	Yes	No	Yes	No	Already HSO, can't retract objective
High	≤ Good	High	≤ Good	High	Yes	No	Yes	No	Already a HSO candidate
< High	≤ Good	High	≤ Good	≤ Good	No	Not applicable	No	Not applicable	Still not a HSO candidate
< High	≤ Good	High	≤ Good	High	No	Not applicable	No*	Not applicable*	See Note 1
High	≤ Good	≤ Good	High	High	Yes	Yes	Yes	Yes	Already HSO
< High	≤ Good	≤ Good	High	High	No	Not applicable	Yes	Yes	See Note 2
High	≤ Good	High	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
< High-	≤ Good	High	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
High	High	≤ Good	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
< High	High	≤ Good	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
High	High	High	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
< High	High	High	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
Eight priority Freshwater Pearl Mussel populations					Yes	Yes	Yes	Yes	Already a HSO candidate
Eight priority Freshwater Pearl Mussel populations					Yes	No	Yes	No	Already a HSO candidate

Highlighted cells represent rules that allow for additional water bodies to have a High Status Objective.

Note 1: Baseline data is <High. Two out of four monitoring cycles are High but fluctuates between cycles.




Note 2: Baseline data is <High. Two out of four monitoring cycles are High and have been High for two cycles in a row.

Lakes									
Baseline (Q value only - 1998-2006)	Overall ecological status				Cycle 2 decision (based on 2007-2015 data)		Cycle 3 decision (based on 2007-2018 data)		
	2007-2009	2010-2012	2013-2015	2016-2018	HES objective ?	HES Objective been met?	HES objective ?	HES Objective been met?	Reason
Not considered	High	≤ Good	≤ Good	≤ Good	Yes	No	Yes	No	Already a HSO candidate
Not considered	High	≤ Good	≤ Good	High	Yes	No	Yes	Yes	Already a HSO candidate
Not considered	High	High	≤ Good	≤ Good	Yes	No	Yes	No	Already a HSO candidate
Not considered	High	High	≤ Good	High	Yes	No	Yes	Yes	Already a HSO candidate
Not considered	≤ Good	High	≤ Good	≤ Good	Yes	No	Yes	No	Already a HSO candidate
Not considered	≤ Good	High	≤ Good	High	Yes	No	Yes	Yes	Already a HSO candidate
Not considered	≤ Good	≤ Good	High	≤ Good	Yes	Yes	Yes	No	Already a HSO candidate
Not considered	≤ Good	≤ Good	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
Not considered	≤ Good	High	High	≤ Good	Yes	Yes	Yes	No	Already a HSO candidate
Not considered	≤ Good	High	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
Not considered	High	≤ Good	High	≤ Good	Yes	Yes	Yes	No	Already a HSO candidate
Not considered	High	≤ Good	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
Not considered	High	High	High	≤ Good	Yes	Yes	Yes	No	Already a HSO candidate
Not considered	High	High	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
Not considered	No data	No data	High	≤ Good	Yes	Yes	Yes	No	Already a HSO candidate
Not considered	No data	No data	High	High	Yes	Yes	Yes	Yes	Already a HSO candidate
Not considered	High	No data	No data	≤ Good	Yes	Insufficient evidence	Yes	Insufficient evidence	Already a HSO candidate
Not considered	High	No data	No data	High	Yes	Insufficient evidence	Yes	Insufficient evidence	Already a HSO candidate

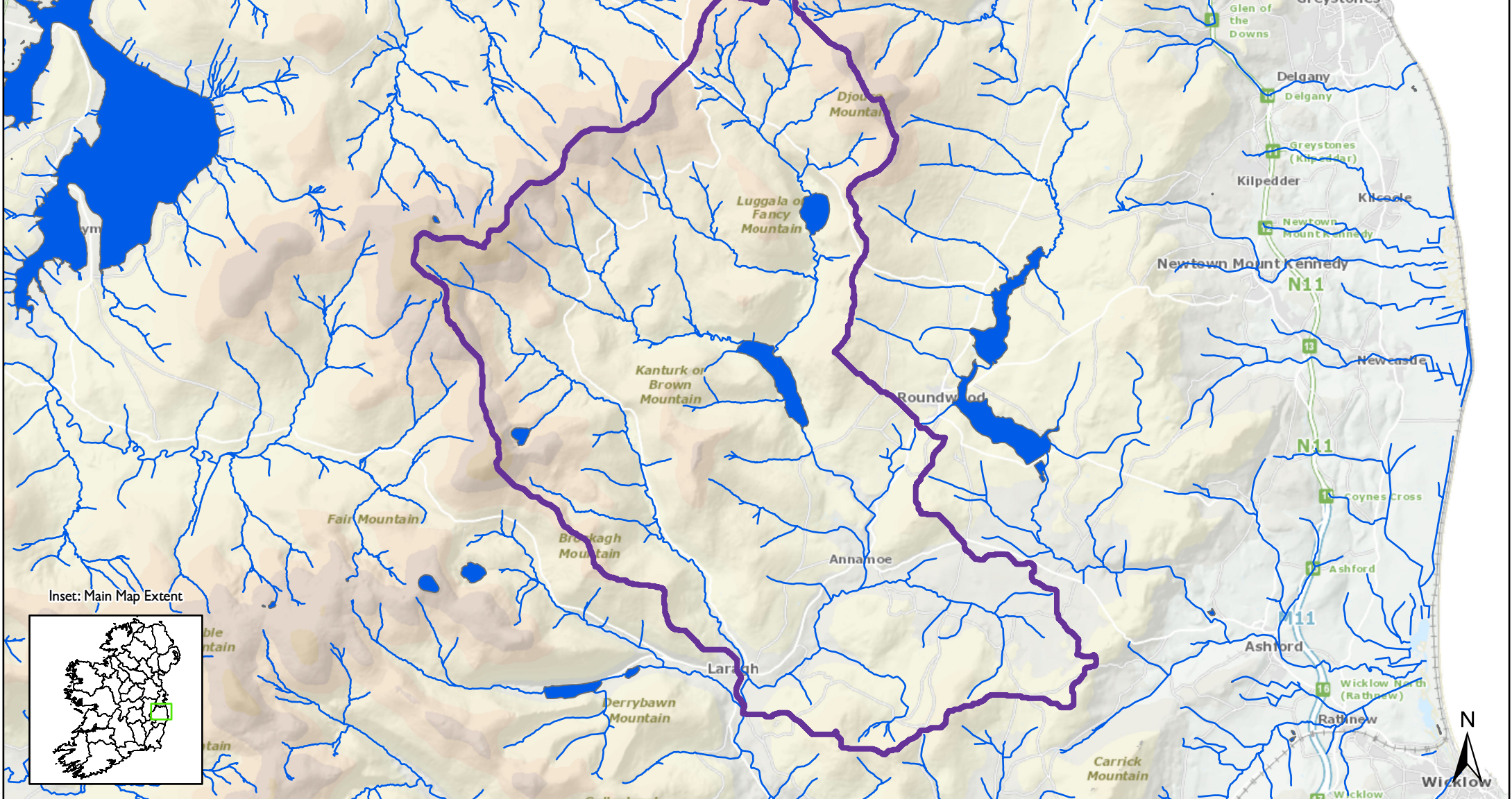
Appendix II

Alterations made to selected EPA sub-catchments to create
demonstration catchments

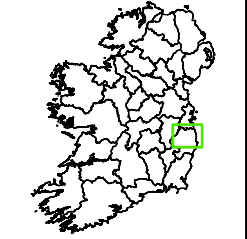
Avonmore Demonstration Catchment (no alterations to Avonmore_SC_010 EPA Sub-catchment)

-  Waters of LIFE Catchment
-  WFD River Waterbodies
-  WFD Lakes

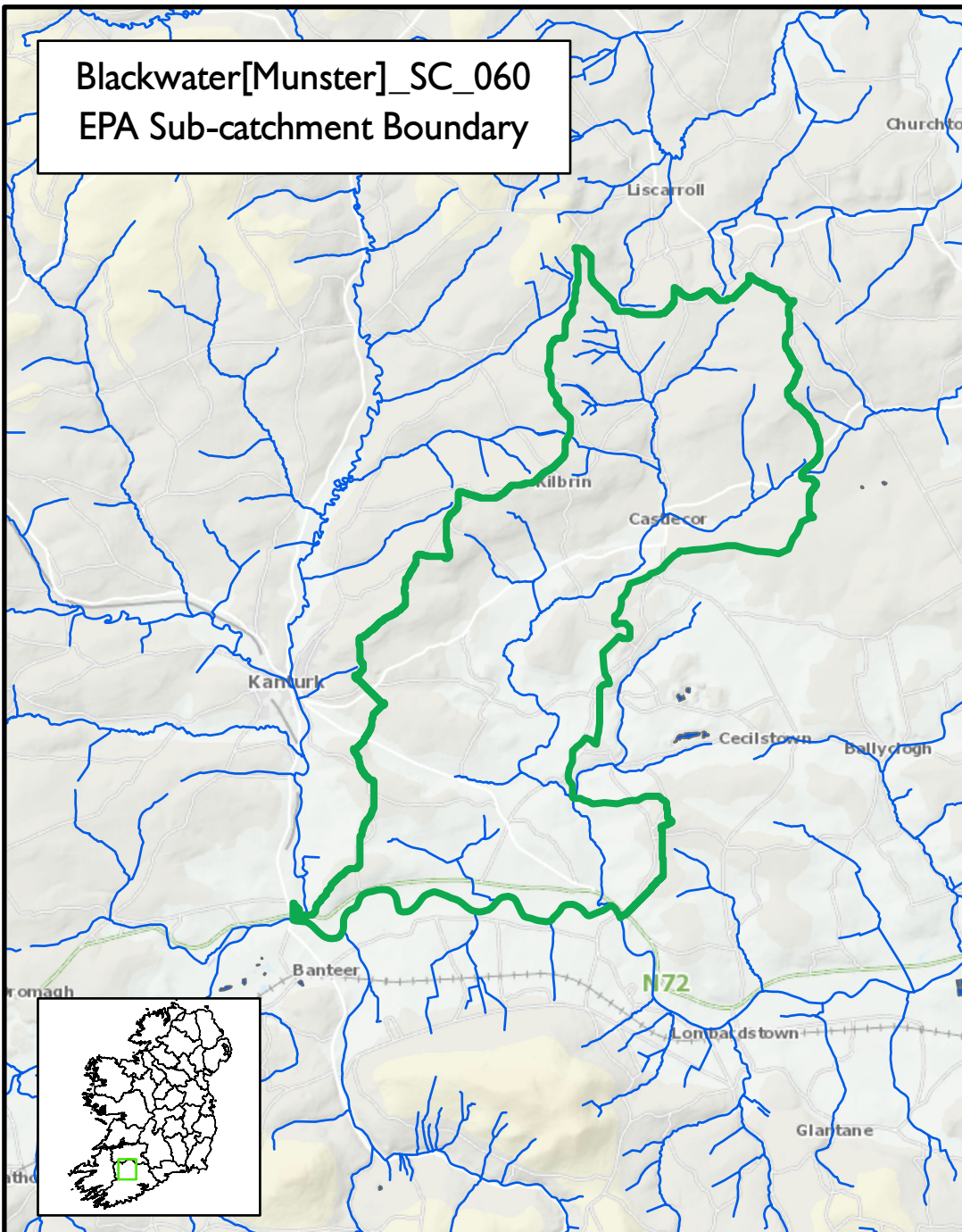
Name: Avonmore



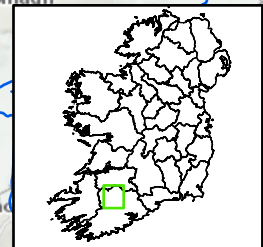
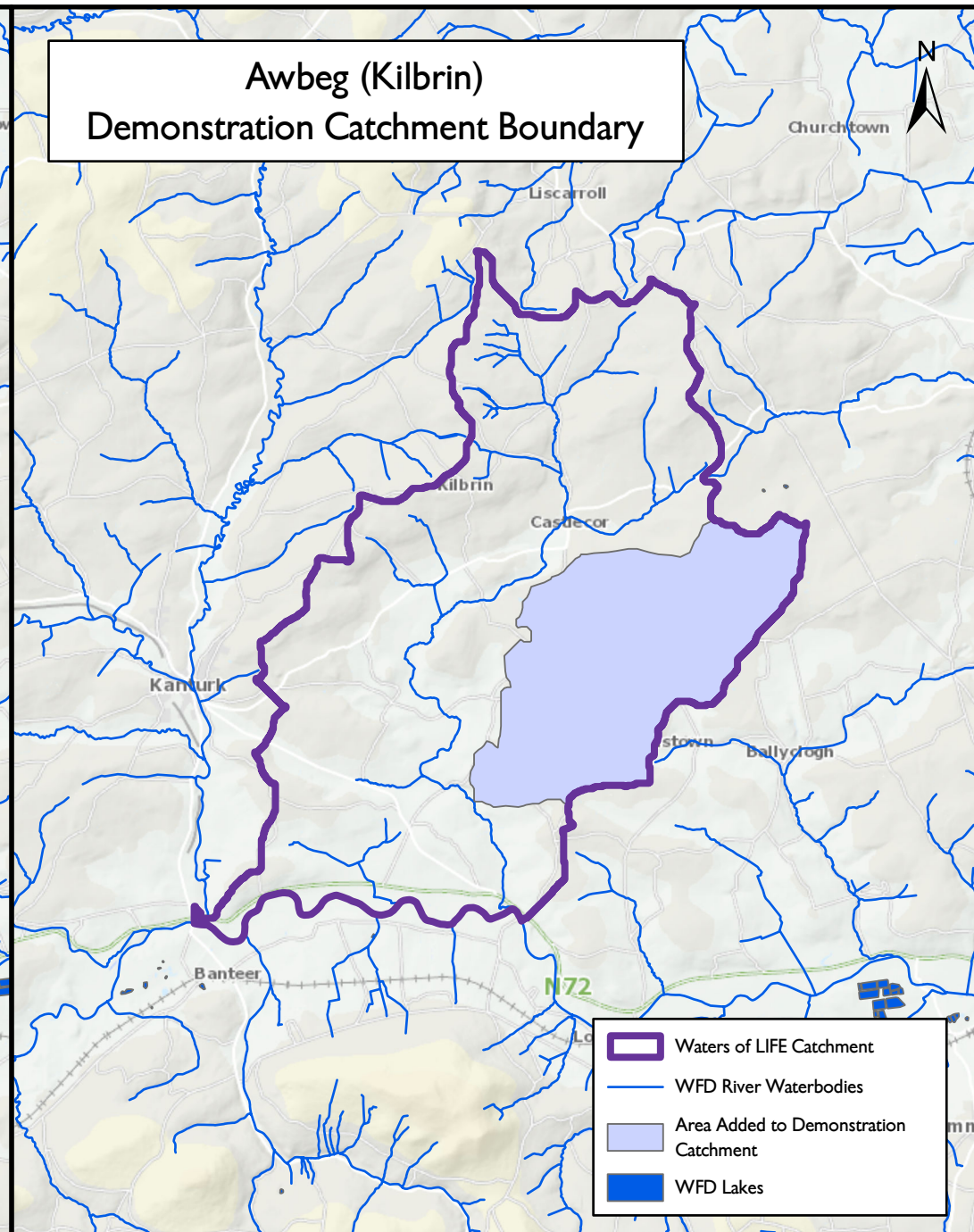
Inset: Main Map Extent






Blackwater[Munster]_SC_060
EPA Sub-catchment Boundary



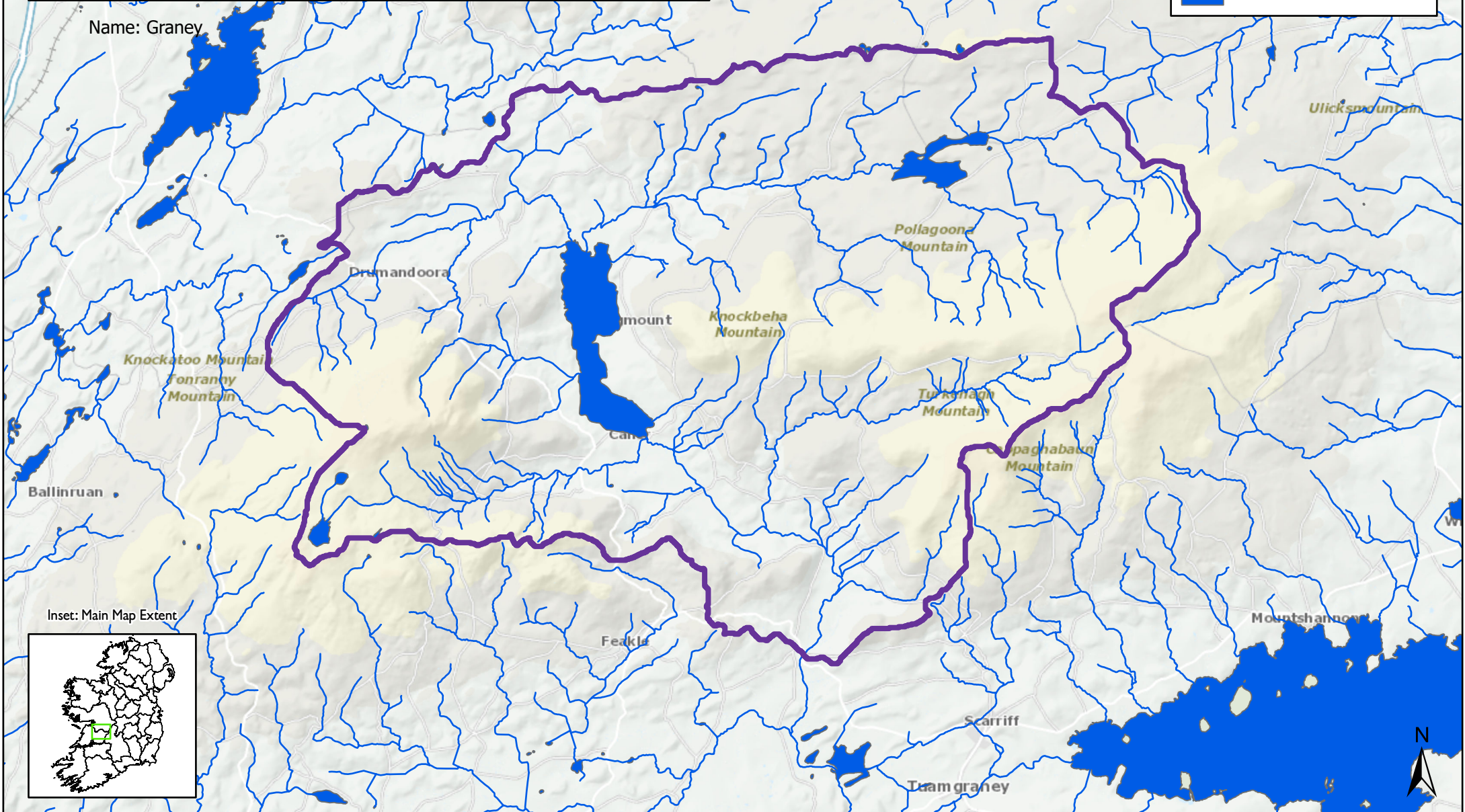
Awbeg (Kilbrin)
Demonstration Catchment Boundary



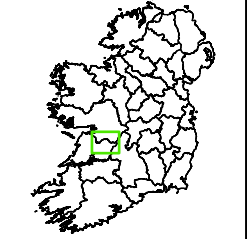
Graney Demonstration Catchment (no alterations to Graney_SC_020 EPA Sub-catchment)

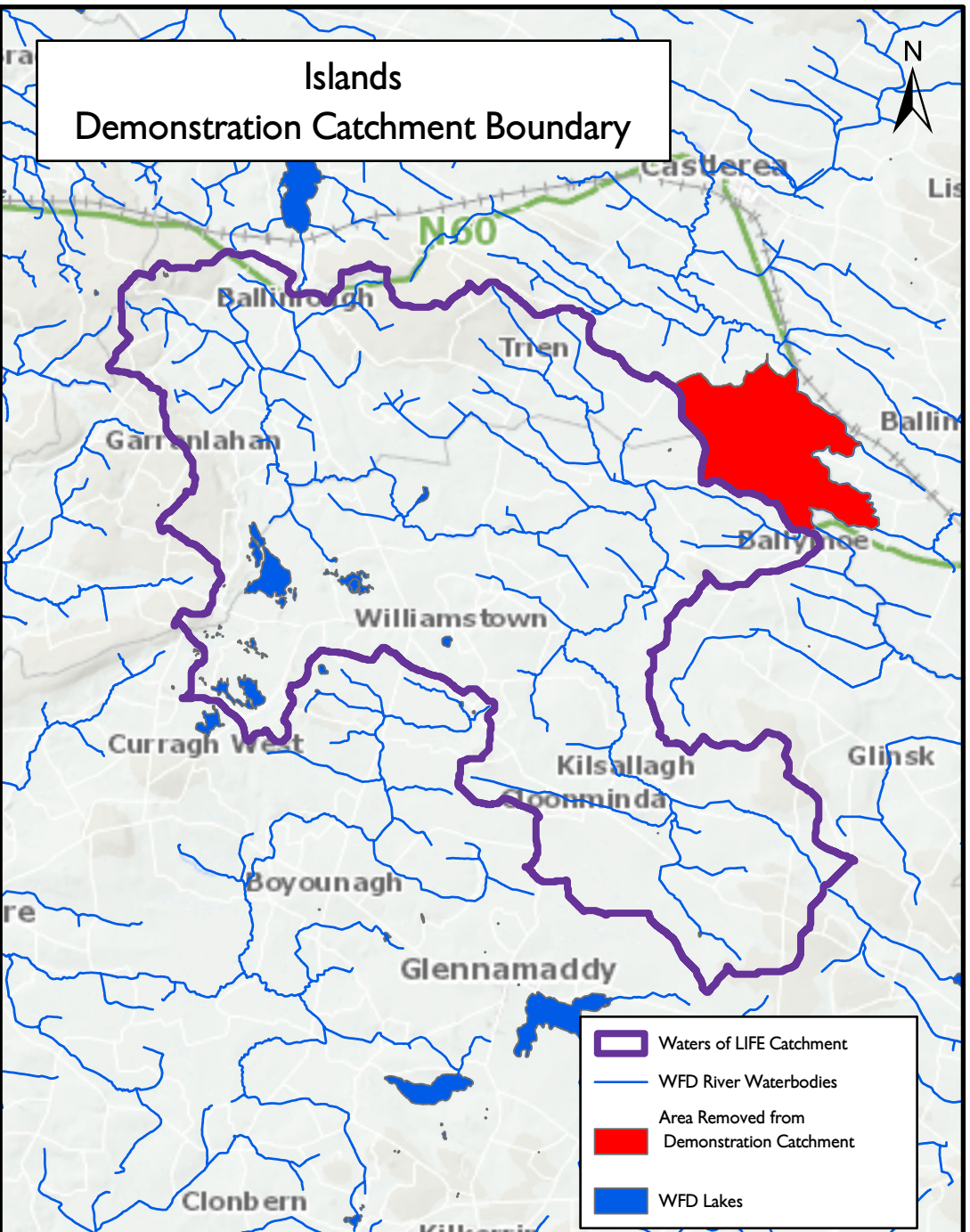
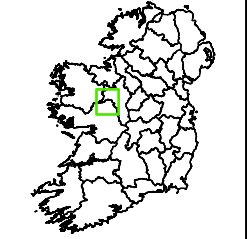
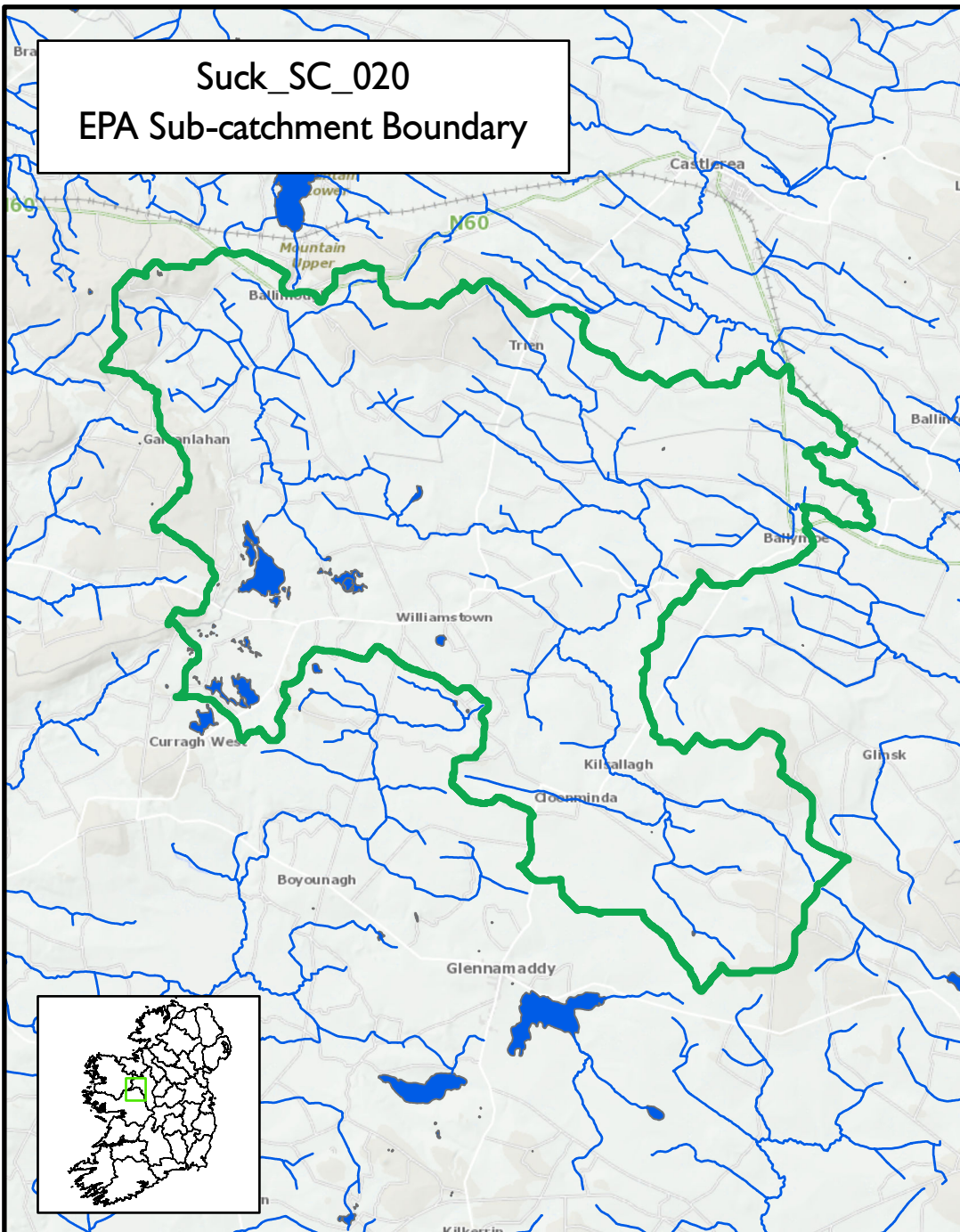
-  Waters of LIFE Catchment
-  WFD River Waterbodies
-  WFD Lakes





Name: Graney



Inset: Main Map Extent






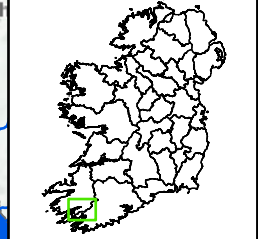
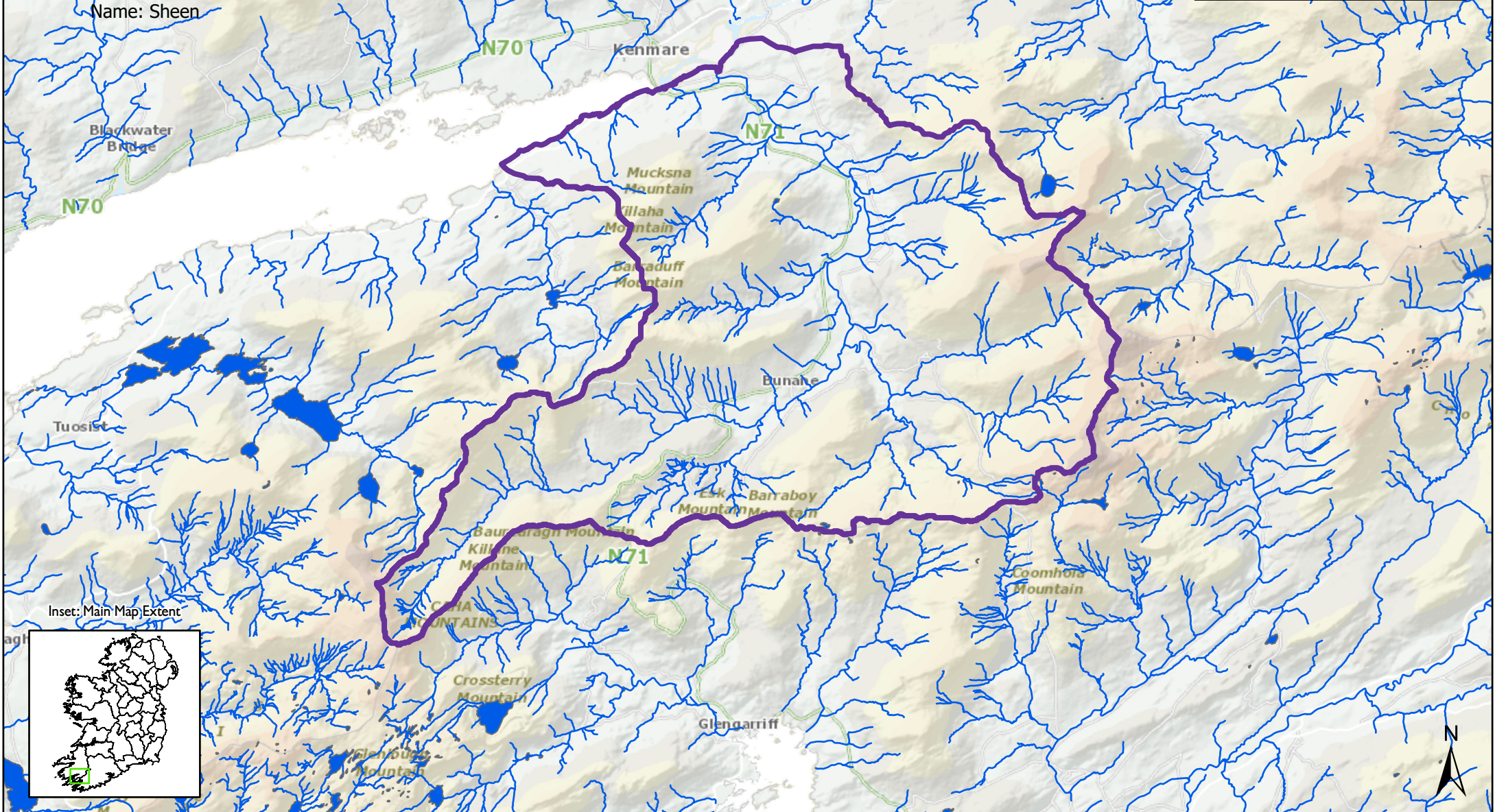
	Waters of LIFE Catchment
	WFD River Waterbodies
	Area Removed from Demonstration Catchment
	WFD Lakes

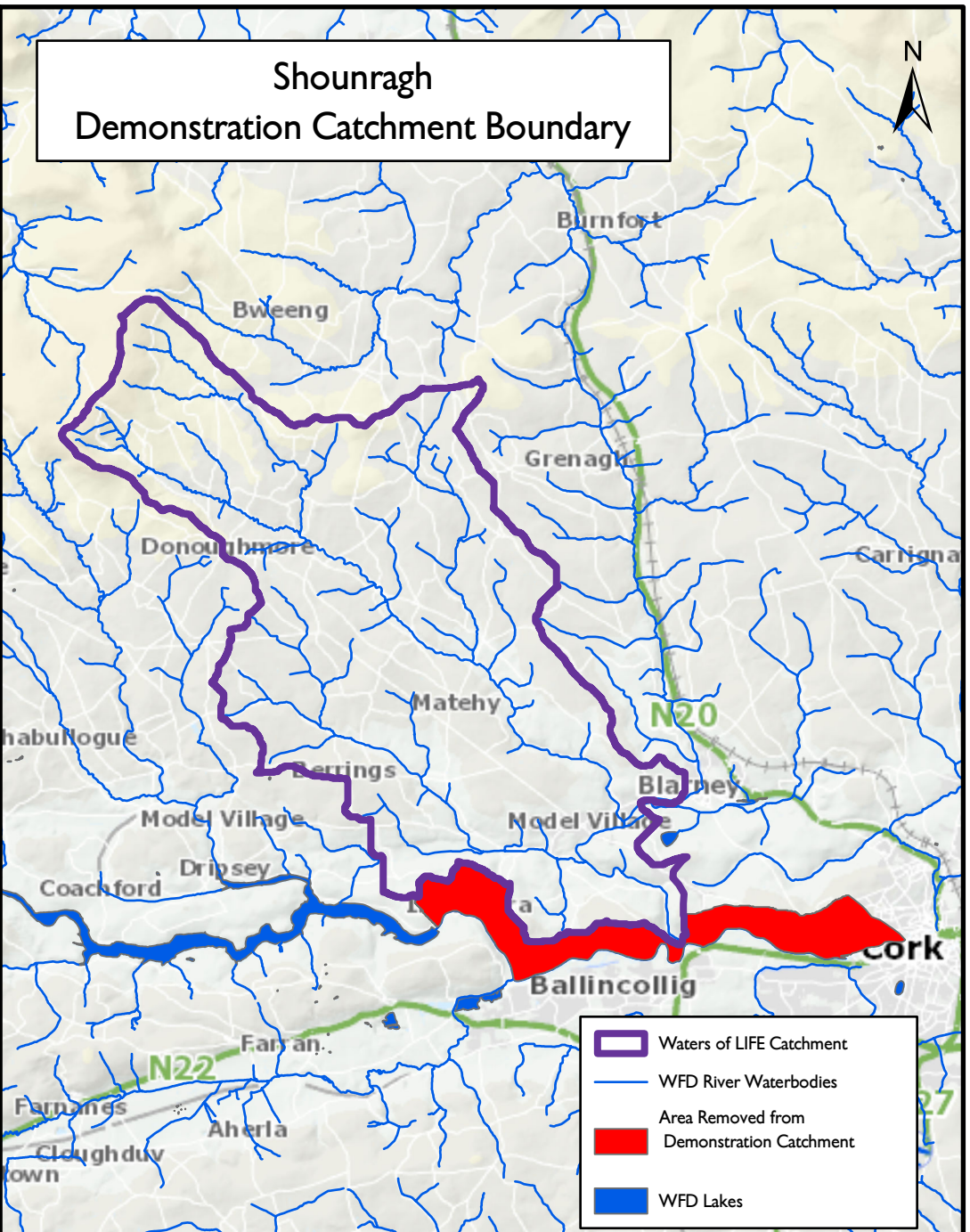
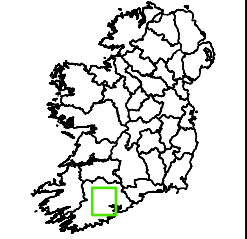
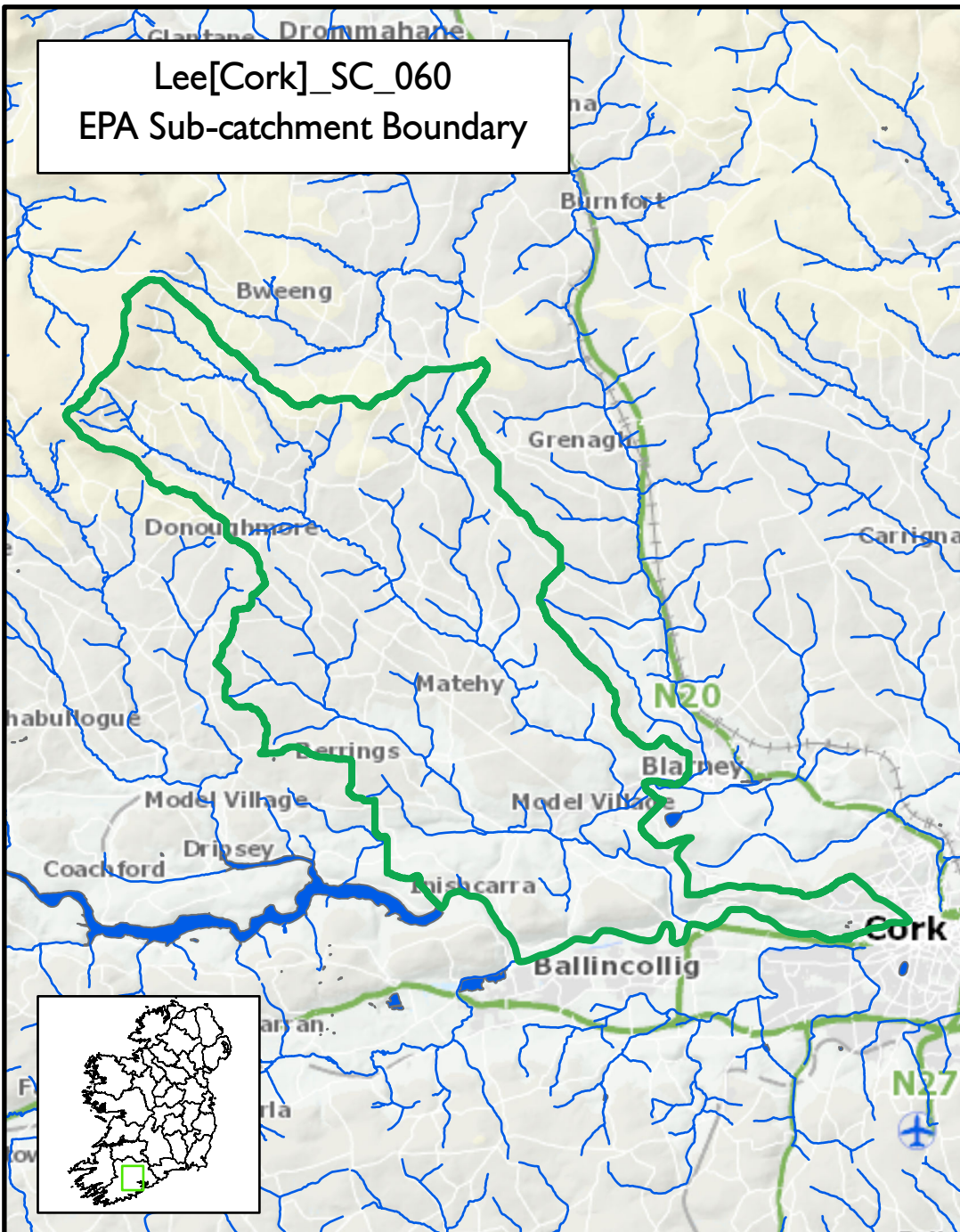
Suck_SC_020
EPA Sub-catchment Boundary





Islands
Demonstration Catchment Boundary

Sheen Demonstration Catchment (no alterations to Sheen_SC_010 EPA Sub-catchment)

-  Waters of LIFE Catchment
-  WFD River Waterbodies
-  WFD Lakes





	Waters of LIFE Catchment
	WFD River Waterbodies
	Area Removed from Demonstration Catchment
	WFD Lakes